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WORK EXPERIENCE

Senior Lecturer (Maitre de Conférence classe A) at Souk Ahras University, Algeria Period 11/2013 to current date

- Head of the Maths and Informatics department since September 2021.
- Head of the university digitization office since September 2022.
- Lecturer in charge of the following courses:
 - Distributed systems, 1st year Master, since 2015.
 - Computer networks, 1st year Master, since 2014.
 - Embedded systems, 2nd year Master, 2019-2021.
 - Introduction to object oriented programming", 1st year License, 2014-2018.
 - Aspets juridiques et economiques des logiciels, 2nd year License, 2015-2018.
- Assistant teacher for the following courses: Algorithmique, Codage, Compilation and Composants Electronique.
- Supervisor of graduation (Bachelor), and post-graduation (Master, Doctorate) projects.
- Member of several doctoral schools' committees.
- Member of the Department Scientific Council since January 2021
- Manager of pedagogy for the 2nd and 3rd year License students, 2019-2021.
- Expert consultant for many university projects: Incubator, Campus network, FabLab and HPC acquisition, since 2020.
- TPC member of ICRAMI international conference, Tebessa, 2021.
- TPC member of CSA international conference, Algiers, 2018.
- Co-organizer of Erasmus+ workshop, Souk Ahras, 2018.
- Organization committee chair of CompSIC national symposium, Souk Ahras, 2015.
- TPC member of CompSIC national symposium, Souk Ahras, 2015.

Senior Networks Consultant at Technicolor (ex: Thomson Telecom), Belgium, from 07/2007 to 06/2013

Mission (generic and customer specific networking software development for xDSL gateway, with over 80 million boxes deployed at France Telecom, British Telecom, Telecom Italia, Telefonica, KPN, Belgacom, Verizon Wireless, Etissalat, STC and others):

- Developed and integrated FON™ hotspot for xDSL gateways.
- Developed FCC ALG for IP TV fast channel zapping.
- Developed TR143 daemon.
- Developed QoS with multi-queue scheduling and shaping per VLAN for a VDSL gateway.
- Developed special NAT rules support for a DSL gateway.
- Ported VoIP over IPV6 for a cable gateway.
- Developed boot-loader secure refurbishment for xDSL gateways.
- Developed WiFi HotSpot components for a DSL gateway (Proxy ARP, DHCP relay, PPP/L2TP, traffic isolation, triple play QoS and integration with Cisco 7200).
- Added ancillary data support for a BSD compatible socket layer.
- Developed IPv6 Multicast router and forwarding cache.
- Developed MLDv2 host (in kernel) and proxy (as a daemon).

- Maintained OpenSSL integrated to the gateways code base.
- Developed QoS for VoIP and user traffic in routing mode for a native Linux gateway.
- Developed IGMP snooping & IGMP spoofing for IP TV.
- Optimized real-time latencies and throughput for triple play gateway with HD TV.
- Developed Ethernet OAM daemon for EFM DSL gateways.
- Fixed several critical bugs in the Thomson proprietary network stack and daemons.
- Provided network expertise to project managers and pre-sales forces.
- Provided knowledge transfer to off site software developers in China and India.

Tools:

- RTEMS and Linux on MIPS based SoCs with VOIP, xDSL, Ethernet and WiFi.
- C, bash, ClearCase, ClearQuest and T32 Lauterbach.
- Traffic generators, network analyzers and telco-like test networks.

Embedded Software Consultant at Alcatel-Lucent, Paris, from 10/2006 to 06/2007**Mission (WiMax CPE for India's C-DOT):**

- Developed manufacturing software components for the CPE: communication protocol with remote PC, telephony audio tests (TAPI) and VoIP (RTP) Core tests.
- Developed the control application of the CPE IP Stack (DHCP, DNS, NAT, NTP and routing with RIP2).
- Developed the web-based configuration application.
- Developed the CPE firmware download and authentication (TFTP, RSA).
- Coached and trained network developers from C-DOT India.

Tools:

- VxWorks on ARM based SoC with WiMax (IEEE 802.16).
- Python, C, Bash, Cygwin, ClearCase and Bugzilla.

Linux Middleware Consultant at PHILIPS, Leuven, from 11/2005 to 09/2006**Mission (Maestro™ a touch screen remote control panel for the digital home):**

- Developed the Networked Home Control Protocol (NHCP) for WiFi real-time transport of control commands (IR, RS232 and Digital IO).
- Developed the diagnostics module and the network & hardware settings module.
- Developed a multicast protocol for Service Discovery in Home networks.
- Developed a generic framework for the remote control of Media Servers.
- Implemented the Escient™ Fireball Communication Protocol.
- Lead the network integration of Maestro with Lutron™ lighting systems, Escient media servers and Philips Maestro extenders.

Tools & methods:

- Embedded Linux (MontaVista) on a Freescale based SoC with WiFi.
- C, Python, Bash, XML, Cunit, Valgrind & Synergy.
- Evolutionary programming, UML and Design Patterns.

R&D Software Engineer at ACTERNA, Paris, from 11/2004 to 07/2005**Mission (with international reporting):**

- Re-factored the application core of an ADSL Test Head (Acterna QT200™) and reused it for the development of a new Gigabit Ethernet Test Head (Acterna QT600™).
- Ported and improved the Linux application core of QT200 from ARM to PowerPC.

- Developed the Linux Self-test of the QT200 V2 board.
- Developed the U-Boot Self-test of the QT600 board.
- Developed a software module for the hardware and network configuration of QT200.

Tools:

- Embedded Linux (ELDK and Montavista) on ARM and PowerPC based SoCs with ADSL and Gigabit Ethernet.
- Python, C++, Bash, XML, CORBA, iPKG, CVS, Bugzilla and BDI 2000.

Doctoral researcher at INRIA, Rennes, from 10/2001 to 09/2004

Mission (RNRT "Cyberte" project with France Telecom and Cisco):

- Developed a component framework for adaptable software in dynamic environments.
- Developed a middleware for the coordination of multiple adaptations.
- Developed a distributed service for resource monitoring.
- Developed adaptable Video on Demand application and Web browser for mobile devices.
- Tutoring of Operating systems, Network protocols and Object-oriented programming courses for Masters at Rennes University.
- Co-supervised a software engineer and two undergraduate trainees.
- Reviewed research papers for TSI French journal (2003).

Tools:

- Linux on IPaq and laptops with WiFi and Ethernet.
- UML, Design Patterns, Python, C++, XML, Java, Jython and Subversion.
- Darwin Streaming Server, Mpeg4ip and profiling tools (mpatroll, ttcp, etc.).

Post-graduate research assistant at INRIA, Grenoble, from 11/2000 to 06/2001

- Designed algorithms to detect time inconsistencies in SMIL 2.0 interactive audio-visual presentations.

Research assistant (DEA) at LRI Annaba University, from 11/1999 to 09/2000

- Developed the GUI of a maintenance expert system for a petroleum facility (Sonatrach).

Teacher at UnIB & Prosoft High Schools, Souk-Ahras, from 09/1998 to 06/1999

- Taught Operating Systems and Computer Architecture courses.

DIPLOMA

- **Accreditation to supervise research** – Souk Ahras University, Algeria, 2021
- **Doctorate in Computer Science** – Rennes University, France, 2005
Specialized in adaptive software components and middleware.
Trained in Management of R&D Projects, Communication and Psychology.
- **European Master of Computer Science** - Grenoble University, France, 2001
Specialized in Distributed Systems, Networks and Multimedia.
- **First year Magister Distributed Artificial Intelligence**, Annaba University, Algeria, 2000
- **Engineer in Computer Science** – Annaba University, Algeria, 1999
First of class award (General ranking: 1st/110).

TECHNICAL SKILLS

I master:

- Computer Networks (QoS, TCP/IP, BSD sockets, daemons).
- C, Python & Unix shells programming.
- Linux & Real Time Embedded systems development.
- Distributed systems and object-oriented development.
- Configuration management (Git, Subversion, CVS, Synergy and ClearCase).

I have very good working knowledge in:

- Network security and lower level protocols (xDSL, WiFi, WiMax & Ethernet).
- Multimedia applications development (VOIP, Video streaming, multimedia formats).
- Java programming.
- Android applications development

PERSONAL SKILLS

- Effective operation and team work within international organizations.
- Ability to multi-task under pressure, self-discipline and motivation.
- Important verbal and written communication experience.

LANGUAGES

- Arabic: Mother tongue
- English: Fluent
- French: Fluent

JOURNAL PUBLICATIONS

1. **Djalel Chefrou**, Evolution of network time synchronization towards nanoseconds accuracy: A survey, Computer Communications, Vol. 191, pp. 26-35, 2022
<https://doi.org/10.1016/j.comcom.2022.04.023>
2. Samir Chabbi and **Djalel Chefrou**. Vulnerability of the dynamic array PIN protocol. Ingénierie des Systèmes d'Information, Vol. 27, No. 1, pp. 41-47, February 2022.
<https://doi.org/10.18280/isi.270105>
3. **Djalel Chefrou**. "One-Way Delay Measurement From Traditional Networks to SDN: A Survey". ACM Computing Surveys, Vol 54, Issue 7, Article 156, July 2021.
<https://doi.org/10.1145/3466167>
4. Samir Chabbi, Rachid Boudour, Fouzi Semchedine and **Djalel Chefrou**. Dynamic Array PIN: A novel Approach to Secure NFC electronic payment between ATM and Smartphone. Information Security Journal: A Global Perspective, 29(6): 327-340, 2020.
<https://doi.org/10.1080/19393555.2020.1773583>
5. **Djalel Chefrou** and Françoise André. "Developing applications in mobile environments using ACEEL adaptive component model". L'Object (Paris), 9(1-2): 77-90, February 2003.
<https://doi.org/10.3166/objet.9.1-2.77-90>

6. **Djalel Chefrou** and Mohamed Tayeb Laskri. "Who_Is : semi-automatic human face recognition". Revue Africaine de la Recherche en Informatique et Mathématiques Appliquées (ARIMA). Volume 1: 39-61, 2002. <https://doi.org/10.46298/arima.1830>

CONFERENCE & WORKSHOP PUBLICATIONS

1. **Djalel Chefrou** and Abdallah Amirat. Using fast string search for Quran text auto-completion on Android. Computer Systems and Applications (CSA) Conference, Algiers, April 2018. Lecture Notes in Networks and Systems, vol 50. Springer, Cham. https://doi.org/10.1007/978-3-319-98352-3_11
2. **Djalel Chefrou**. "Developing component based adaptive applications in mobile environments". ACM Symposium on Applied Computing (SAC), 1146-1150, Santa Fe, New Mexico, March 2005. <https://doi.org/10.1145/1066677.1066935>
3. **Djalel Chefrou** and Françoise André. "Auto-adaptive cooperative ACEEL components". 3ème Conférence Française sur les Systèmes d'Exploitation (CFSE'3), La Colle sur Loup, October 2003.
4. **Djalel Chefrou** and Françoise André. "ACEEL: a model of auto-adaptive components applied to mobile environments". Journées sur les Systèmes à Composants Adaptables et Extensibles. Grenoble, France, October 2002.